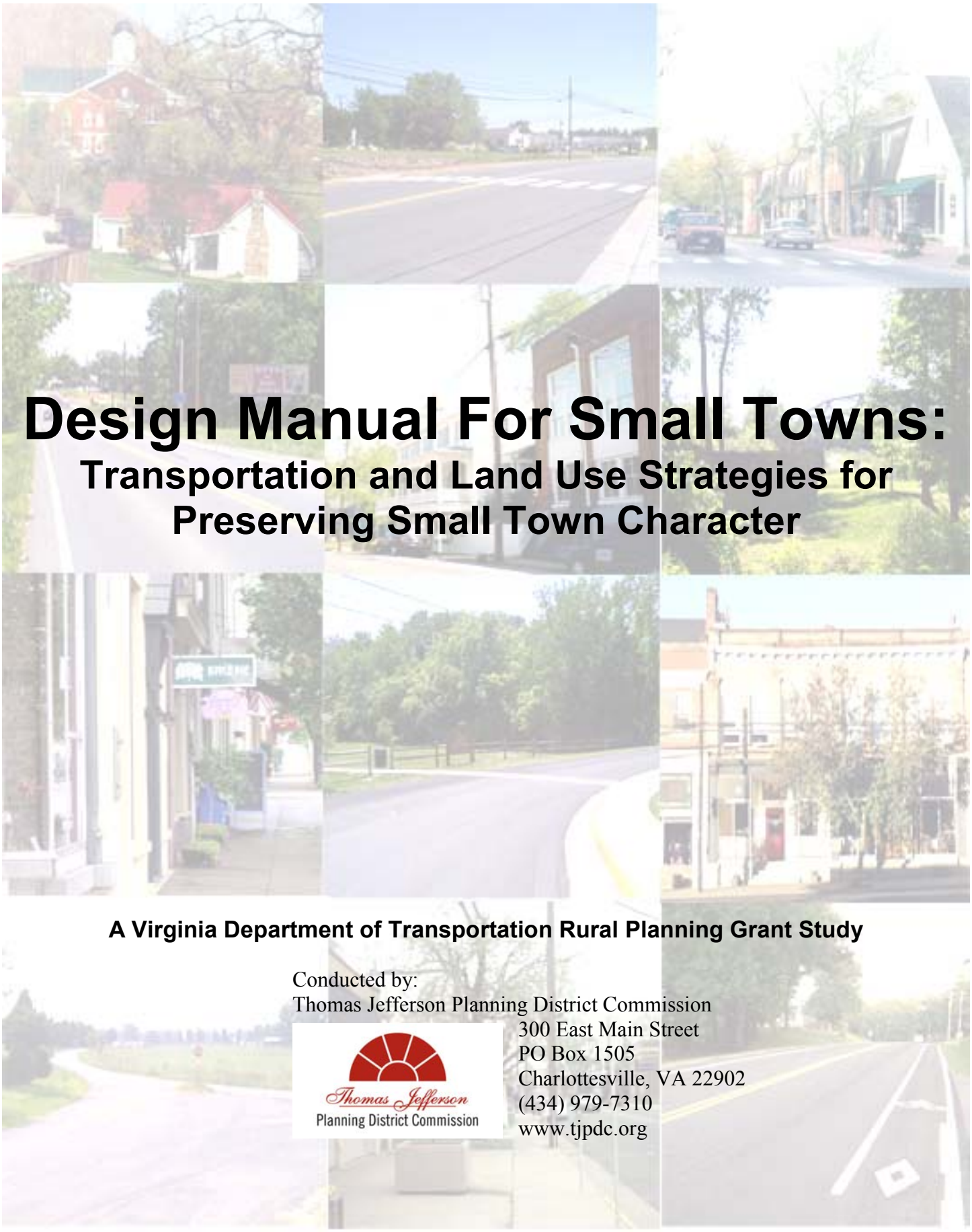

# Design Manual For Small Towns:

## Transportation and Land Use Strategies for Preserving Small Town Character

**A Virginia Department of Transportation Rural Planning Grant Study**


Conducted by:
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The Thomas Jefferson Planning District Commission thanks the Planning District's Rural Technical Committee (comprised of local planning staff, JAUNT, and VDOT staff) for their valuable comments on this Manual; the Town of Scottsville whose companion manual "Reinvesting in Scottsville's Heritage" proved to be a valuable resource; consultants Walkable Communities, Alternate Street Designs and Trias Associates; and the Virginia Department of Transportation whose Rural Transportation Planning Grant program made this Manual possible.

The Manual is not an engineering document for construction purposes. It rather is a means for local officials and residents to develop solutions to existing problems and a resource for making informed assessment of proposed future developments.

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# Executive Summary

## Introduction

Design Manual for Small Towns: Transportation and Land Use Strategies for Preserving Small Town Character is a practical "how to" handbook for residents of small towns, their elected officials, and the local government staff who support them. It is organized in a fashion that shows the community how to work together to better understand the existing conditions, identify current transportation problems, and articulate desirable solutions.

## Community Process

Citizens in small, rural towns can use several tools to promote strong transportation and development decisions in their community. The community process is important to inform citizens and allow residents to participate in the planning process. The street inventory, neighborhood audit, and town charrette allow citizens to plan, preserve, and guide the future of their town

## Identifying Existing Problems

Each small town faces individual, but similar issues that threaten vitality and character. The Manual discusses several existing transportation issues associated with small, rural towns. These deal primarily with traffic through the downtown and nearby residential areas.

## The Toolbox

The toolbox presents a variety of progressive, practical transportation techniques and roadway treatments to solve identified problems. Pictures and diagrams provide residents and local officials with an idea to take to consultants or designers.

## Future Land Use Choices

As small towns continue to grow, following traditional land use principles can help preserve the character and history of the place. Appropriate land use policies guide the development of an expanding transportation network, new physical growth, the creation of new residential areas, and maintaining the integrity of the downtown. Future land use choices can accommodate growth with an awareness of natural surroundings

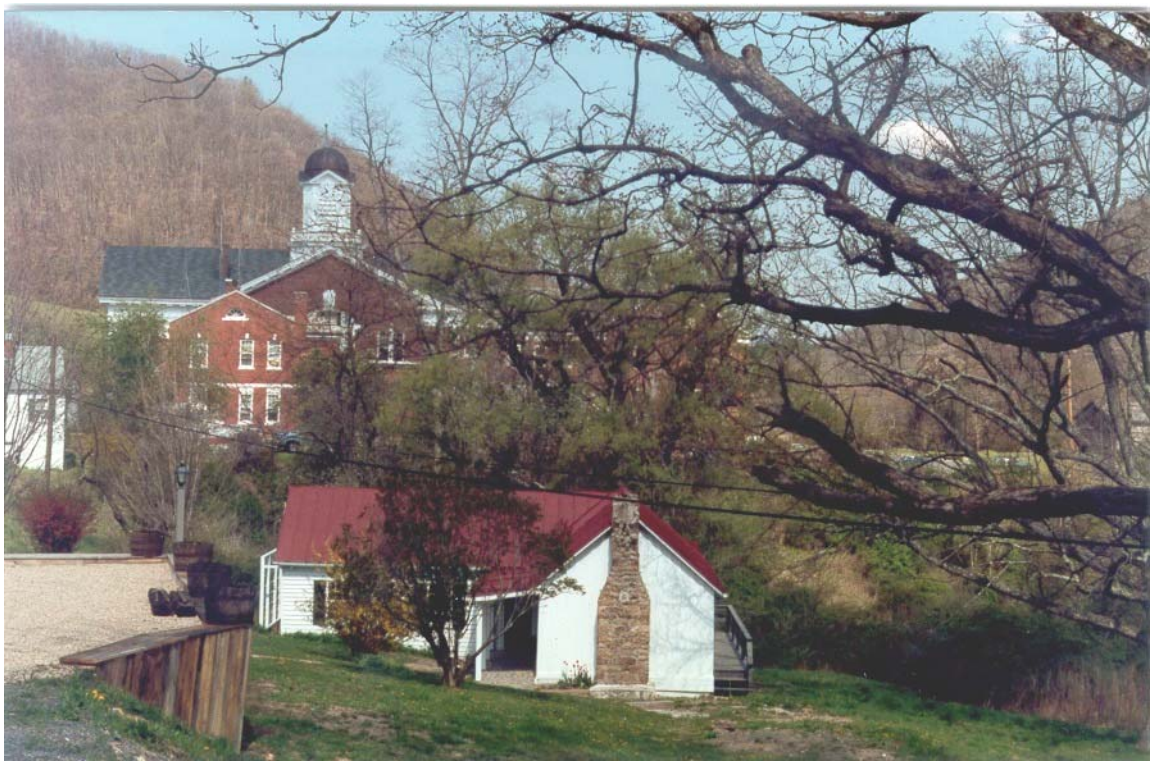
## Implementation

Most towns can identify more problems than there are funds to implement. Clearly the town must set priorities for implementation by identifying, and periodically re-examining, phased approach to implementation. Once high priority projects have been identified, specific planning and design documents and construction plans should be completed. For large scale projects, environmental review and right-of-way acquisition may be necessary. In the design phase, designers should prepare plans that are compatible with the town's history and architectural character.

# Introduction

The Design Manual for Small Towns: Transportation and Land Use Strategies for Preserving Small Town Character is a practical "how to" handbook for residents of small towns, their elected officials, and the local government staff who support them. It is organized in a fashion that shows the community how to work together to better understand the existing conditions, to identify current transportation problems, and to articulate desirable solutions. The Manual also describes in detail the problems typical of many small towns. Since it is often easier to identify the problems than to find the best solutions (most town residents can readily describe the problem: "Traffic goes too fast on Main Street"; "It's not safe to cross Main Street"; "How can we get bicycles off the sidewalks?"), the Manual includes a comprehensive toolbox of possible solutions. The inventory of problems chapter is cross-referenced to the toolbox of workable solutions. Once the problem is identified, the full range of possible solutions to that problem is easily accessed. Finally, the Manual describes ways future growth can occur in order for sound transportation choices to be incorporated as development occurs.

The Manual is not an engineering document for construction purposes. It rather is a means for residents to develop solutions to existing problems and a resource for making informed assessment of proposed future developments. The transportation and land use strategies discussed are recommendations specific to small towns. More specific studies must be done before construction begins, recognizing that any solution must conform to local, state, and federal standards.



# Community Process

Citizens in small, rural towns can use several tools to promote strong transportation and development decisions in their community. The street inventory, neighborhood audit, and town charrette allow citizens to plan, preserve, and guide the future of their town.

### Street Inventory: The Physical Elements

The street inventory records data about the physical elements of the town or community. It describes the physical elements of the neighborhood, including streets, sidewalks, parking, open space, and zones of community activity. Collecting data and making observations is the first step to identifying problems. It is helpful to develop a Street Inventory Form that can act as a guide for citizens. The Form should be clear, simple and provide choices for participants, while familiarizing citizens with planning tools and language. A sample form is provided in the appendix.

Street inventory forms should address:

- **Observer Information:** The introductory information, such as name, neighborhood, date, and time is important to understanding answers on the street inventory.
- **Technical Inventory:** The technical section of the form gives citizens an opportunity to respond and record their observations. The form should include subjects such as roadway type, number of lanes, type of walkway (if any), traffic volume, and perceived average speed. There should be answer choices to circle, highlight, or check.
- **Additional Comments:** The form should have an open section for the observer to supply further comments and a drawing of the street section.

### Neighborhood Audit: Examining Existing Conditions

The audit asks community members to identify the existing conditions in their neighborhood: how traffic behaves, pedestrian and bicyclist activities, parking availability, economic vitality, open space, and growth. It usually involves a walking tour of the town, guided by local officials and planning consultants and should encourage participants to describe and discuss problems. It enables people to assess the infrastructures of the community and increases their awareness of the surrounding environment. A sample community audit form is provided in the appendix

A strong neighborhood audit contains:

- **Central Location:** The audit should begin from a central location that is familiar and accessible by various members of a community. Possible starting points could include the town hall, a central square or park, a school, or other civic space.
- **Good Timing:** The time of the neighborhood audit should attempt to accommodate various schedules. Saturday mornings have proven to be very successful and well attended in some communities.

- **Advertising:** Similar to the town charrette, the audit needs to be publicized by local newspapers, community-access television, radio, flyers, and letters.
- **Walking Tour:** Before the tour, planning staff should decide on the direction of the walking audit. The path should be easily manageable for kids, adults, seniors, and persons with disabilities. It should also intersect with places that reveal issues of interest or concern. If the walking tour passes through areas of high traffic, a police escort should be considered to ensure safety. Since the length of the audit varies widely, it is a good idea to provide refreshments or suggest participants bring snacks.

### The Town Charrette: Identifying Issues, Problems, and Solutions

A town charrette is an intensive, fast-paced, highly interactive and engaging workshop that encourages citizen involvement. The activities explain key problems and help citizens identify practical solutions. The charrette involves residents and neighborhood business owners, representatives from community organizations, and members of local and state agencies. It gives citizens a sense of ownership in the planning process.

The planning of a charrette should include certain principles and agenda items.

- **Location:** The place for the charrette should be familiar, friendly, and easy to reach for town citizens. It should also be easily accessible by persons with disabilities. Location suggestions include the local community center or neighborhood school. The space should be large enough for a gathering of people, with plenty of tables and chairs, and proper support equipment.
- **Time:** The time of the meeting should accommodate all citizens. It should be held in the early evening after the close of the business day, or on Saturday after the walking audit. If it during the dinner hours, refreshments are always a good idea.
- **Advertising:** It is important to invite people and to advertise charrette information. Invitation letters, phone calls, flyers, banners, temporary road signs, and public announcements via newspaper and radio are several methods to spread the word. At the meeting, signs should be posted to direct people to the correct place.

- **Slide Show:** Begin the program with a slide show of general issues that affect small town development. Present related problems and suggest practical, applicable solutions.
- **Problem Identification:** Ask people to describe their concerns and problems. List the observations on large paper and post on the wall.
- **Prioritizing:** After everyone has had an opportunity to speak, give each participant post-it notes or colored dot stickers. Ask them to write on the note or place the dots on the statements that describe their highest priorities.
- **Work Tables:** Ask participants to assemble in small groups of 6-8 people around a blue-print size map of the study area. Ask participants to use colored markers to indicate places of concern and draw potential solutions to the problems.
- **Presentations:** A representative from each table describes the map and solutions. Typically, the audience begins to realize that the groups agree on key issues and came up with similar solutions.

# Identifying the Existing Problems

No place is perfect. Each small town faces individual, but similar issues that threaten vitality and character. But, what is wrong? Are there too many cars? Are motorists driving too fast? Is the area unsafe for pedestrians? These questions, and others, need to be answered to identify and address existing problems. Understanding the problem or mixture of problems is the first step in developing effective solutions. The Manual presents and discusses several transportation issues associated with small, rural towns and suggests several possible remedies. The design guidelines offer citizens and town officials new ideas for enhancing existing transportation systems and future development.

### Overview of Problems

- Pedestrian Safety: Street and sidewalk facilities do not adequately support or accommodate pedestrian safety.
- Bicycle Safety: Cyclists do not feel comfortable traveling beside vehicles due to motorist's speeds or road width.
- Traffic Congestion: There is not a steady flow of traffic. Motorists and other road users experience frequent stopping and delays.
- Speeding Traffic: Vehicles travel too fast and disobey the posted speed limit.
- Through Traffic: Motorists use the secondary streets as an alternative to the arterial roadways, creating issues for neighborhood residents.
- Large Trucks: Oversize trucks travel through the downtown, creating congestion, noise, and pollution.
- Street Noise: The noise pollution generated by vehicular traffic is unpleasant.
- Not Enough Parking: It is difficult for residents or visitors to a community to find parking in the downtown area.

## PROBLEM: Pedestrian Safety

Street and sidewalk facilities do not adequately support or accommodate pedestrians. Residents and visitors in the town or neighborhood are uncomfortable walking because of nearness of vehicles, lack of pedestrian amenities, or poor lighting. It is also difficult to cross the street, creating safety and accessibility issues.

Sharing the road with vehicles is dangerous and creates an uncomfortable atmosphere for the pedestrian.

Seniors must be given enough time to cross the street.

## SOLUTIONS:

Increasing pedestrian safety starts with basic sidewalk improvements and regular maintenance. After clear and safe sidewalks are established, it is important to expand the pedestrian system, connecting origins to destinations. Certain design elements also contribute to pedestrian safety. Suggestions include:

## PROBLEM: Bicycle Safety

Cyclists are uncomfortable sharing the road with motorists due to vehicular speeds or poor street design. There is a perception of conflicts, either with cars on the street or pedestrians on the sidewalk.

A broken and deteriorating shoulder of this rural highway is unsafe for cyclists.

Cyclists on the sidewalk conflict with pedestrians.

## SOLUTIONS:

The best technique to enhance bicycle safety is to provide separate facilities for cyclists. To increase bicycle safety, consider the following:

## PROBLEM: Traffic Congestion

Roadways are over capacity and traffic moves at an irregular pace. Especially during peak times of the day, motorists and other road users experience frequent stopping and delays. If traffic consists of through or long-distance travel, regular or severe congestion can contribute to a decline in small town character.

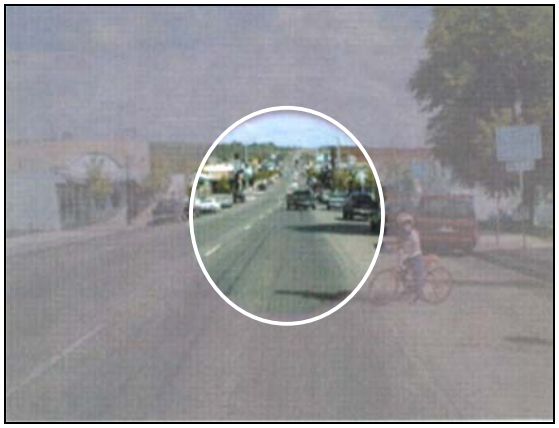
Traffic congestion on a main street.

## SOLUTION:

Developing an integrated transportation and land-use plan is the first step to improving traffic congestion. The entire street system needs to be functioning well, offering alternate arterial or collector routes for local or visitor travel. Also, the availability and utilization of public transportation and pedestrian facilities can reduce the number of cars on the road. Additionally, ridesharing can assist with commuter traffic reduction. Congestion can be helped with:

## PROBLEM: Speeding Traffic

Vehicles travel too fast through an area and ignore the posted speed limit. Since motorists typically drive at speeds they perceive as safe, poor road design can inadvertently contribute to speeding.



At **40 mph**, a driver's focus is on the roadway in the distance

At **20 mph**, the foreground comes into view.

## SOLUTION:

Several approaches exist to resolve the speed issue: slow the traffic through traffic calming measures, smooth out the traffic flow, and create transition zones in the streetscape. Reducing speeds can be accomplished through physical constraints or by creating an illusion of less road space. Design elements used to combat vehicular speed involve:

## PROBLEM: Cut-Through Traffic

Motorists use neighborhood streets as an alternative to the arterial roadways to avoid congestion and signalized intersections. The increase in vehicular through traffic creates problems for neighborhood residents.

Motorists exit an arterial road to use the local street through a urban neighborhood.

## SOLUTION:

The solution to through traffic involves 1) improving traffic flow on the main roads, and 2) reducing the speeds and flow on neighborhood streets. Traffic calming devices in the alternate travel route or at intersections discourage cut-through motorists. Links between the local, neighborhood streets and the arterial road could be narrowed or, in extreme situations, closed. Compromise should be readied between the accessibility of the area for residents and for through traffic. Potential tools are:

## PROBLEM: Large Trucks

Heavy trucks carrying freight create congestion, noise, and pollution as they travel through the downtown. They disrupt the pedestrian atmosphere and make it uncomfortable for bicyclists.


A truck turning from a local street onto the arterial roadway in downtown Scottsville, VA.


A truck unloads its freight while blocking one lane of the main street in a small town.

## SOLUTION:

There are a couple of options to managing truck traffic through a downtown, most of which deal with minimizing the presence of the larger vehicles. Traffic calming treatments control truck speeds and create buffers. A more creative solution could include increasing the number of shipment trips, but using smaller trucks. If through truck traffic becomes a serious problem, a small town should consider an alternative truck route or bypass.

## PROBLEM: Street Noise

The noise pollution generated by vehicular traffic is unpleasant. Pedestrians and business owners are unable to enjoy their surroundings and comfort is compromised.


Noise from trucks and other heavy vehicle traffic make walking along main street unpleasant for pedestrians.

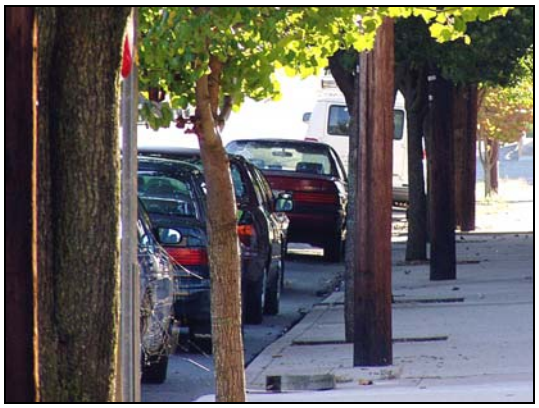
## SOLUTION:

Overall noise in a small town increases with traffic speed, volume, stops, proximity, and reflecting surfaces. Dropping the speed and implementing certain landscape features can have a significant impact on reducing the noise in a small town. To reduce noise, consider the following:

## PROBLEM: Not Enough Parking

Vehicle parking is limited. It is difficult or impossible for visitors or local resident to find available parking spaces throughout the town, especially in the downtown area. Problems with parking downtown relate to vehicular access, urban design, and the pedestrian network.

Finding on-street parking in a rural downtown is sometimes very difficult.



There are few spaces and turn-over is low.

## SOLUTION:

Small towns need to improve management of space in the downtown area. Parking turnover needs to be high. Time limitation, meters, and ticketing, as well as a parking management program are a good start. Providing physical space specifically for short-term visitors and customers that is easily accessible and visible can have positive effects on the downtown economy. It is also important to encourage other forms of transportation, which alleviate the need for parking altogether. Possible solutions include:

# THE TOOLBOX: DESIGNS FOR WORKABLE SOLUTIONS

## Low Cost

### Speed Humps and Tables

Speed humps are typically paved with asphalt, approximately 3-6 inches high at their center, and extend the full width of the street, but they should be spaced 400 to 500 feet apart for maximum effect and should be part of a neighborhood traffic-calming program. They are generally the cheapest but least desirable treatment, due to noise and impacts on emergency vehicles.

A speed table is essentially a flat-topped speed hump. Speed tables can be a good solution at school crossings, trail crossings and in parking lots. Speed tables are often striped as crosswalks. Speed humps and tables must be well-marked and well-lit so that they can be detected from 200-300 feet. The aesthetics can be improved through the use of color and specialized paving materials.

Both are used as traffic calming treatments to slow traffic where few other measures can be applied and for reducing speeds where crosswalks and trails cross local and low-volume collector roadways.

**Considerations** when installing speed humps and tables:

- Minimal effect on slowing trucks and sport utility vehicles.
- Use when problems are very localized and can be controlled with a single measure.
- Can delay emergency vehicle response times by 5-10 seconds each.
- Create noise and may shift speed problem to other streets.

## Roadway Narrowing

Reducing the number of lanes on an existing multi-lane roadway, were the lanes are not required for actual traffic volume, is an easy and inexpensive traffic calming strategy. Simply re-striping the roadway can reduce the crossing distances for pedestrians and can slow vehicles to appropriate speeds. For example, a four-lane, undivided road can be converted to one through lane in each direction with a center left-turn lane and bicycle lane on both sides. These treatments make the driving area appear to be narrow without adding curbing to physically narrow the roadway.

The street can also be physically narrowed by extending sidewalks, providing landscaped areas, or adding on-street parking within the former curb lines. This often reduces vehicle speeds along a roadway section and enhances movement and safety for pedestrians. Other measures include installing short medians, bike lanes, and possibly sidewalks. If there is enough room, a landscaped buffer may be installed to separate pedestrians from the travel lanes.

**Reducing the number of travel lanes:**

- Improves motorist compliance.
- Reduces top end speeders most hours of the day.
- Adding bicycle lanes on higher-volume streets with speeds in excess of 20 mph enhances bicycle travel by increasing the predictability of both car and bicycle movements.
- Has the potential to positively affect roadway capacity by reducing traffic volumes.
- Enhance safety.
- Redistributes space to alternative modes.

## Crosswalks

Marked crosswalks indicate the proper locations for pedestrians to cross and make pedestrian actions more predictable for motorists. They contribute to pedestrian comfort and create important linkages in the pedestrian system. Crosswalks normally exist on all legs of intersections. They increase visibility, alert drivers of a high pedestrian area, and add to the attractiveness of downtown.

Two parallel lines are generally not enough to distinguishing a crosswalk. At a minimum, a ladder pattern type of striping or painting inside the crosswalk area is recommended to improve visibility. Lighting should also be provided to increase sight distance at night.

**Crosswalks:**

- Increase pedestrian safety and visibility to motorist.
- Indicate proper locations for pedestrians to cross the road.
- Create connections within the pedestrian network.

## Pedestrian Refuge Island

A pedestrian refuge island is a raised island placed in the center of a street at an intersection or mid-block location to help protect pedestrians from vehicles. They are critical on roadways with high speeds and high traffic volumes. Refuge islands allow pedestrians to be concerned with only one direction of traffic at a time.

Although 8 feet is preferable, pedestrian refuge islands must have a minimum standing area of 4-feet. It is also important to cut the median island to provide bicycle lane access and to keep the street opening as wide as the crosswalk. To improve pedestrian safety, lighting and landscaping can be installed.

**Pedestrian refuge islands are used for:**

- Enhancing pedestrian and bicyclist crossings, particularly at un-signalized points.
- Reducing left turn crashes.
- Simplifying pedestrian decision-making

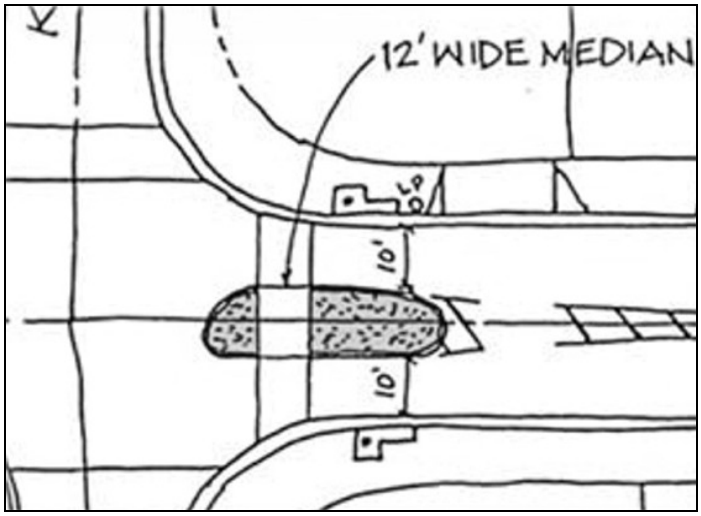



Diagram and suggested measurements for pedestrian refuge island.

## Trails

Trails can be multi-modal to allow walkers and bicyclist, and even horses where desired. Streets which carry large volumes, or less experienced, bicycle and pedestrian traffic should offer parallel multi-use trails. These facilities are separated from the roadway to provide maximum safety and room for movement, but also should be integrated with on-road bicycle and pedestrian facilities. Links to natural areas and parks are another "natural" use for these types of trails, which can also be used as buffers to protect water and wildlife.

Not all trails should be paved. Some should be for general public use while others would serve more exclusive neighborhood trails. Railroad right-of-way not being used for trains can be used for trails (with the possibility of returning the railway to future train use). Power, gas and waterworks corridors can make great trail locations.

**Trails are best for:**

- Creating a transportation network dedicated to pedestrians and bicyclists.
- Improving the safety of all uses.
- Providing links to parks and "natural" areas.
- Developing a greenway.
- Protection of water resources and environmentally sensitive areas.

Bollards prevent vehicles entering trails.

## Bike Lanes

Arterial and main streets need to provide safe travel and access for bicyclists. Only on streets where speeds are very low—25 mph or less— should cyclists share the regular travel lane with cars. Where there is enough right-of-way, striped bike lanes can help better define travel lanes for cyclists and motorists. Bike lanes should be 5-6 ft wide.

Bike lanes contribute to traffic calming and safety by increasing motorists' awareness that bicyclists are welcomed and encouraged on the roadway. They create more consistent separation between bicyclists and passing motorists, and can also provide a buffer zone between motor vehicles and pedestrians on a sidewalk. Proper signage alerts motorists to bicyclists. Bike racks contribute to convenience and comfort at destinations of bike trips. Links to trails are necessary to form a complete system with origins and destinations.

**Bike lanes:**

- Provide a separate travel facility for cyclists.
- Reduce conflicts with cars and pedestrians.
- Contribute to traffic claming by narrowing the vehicle travel lane.

Bike lanes should be well marked to ensure safety.

## Gateway

A gateway is a geometric or physical landmark that indicates a change in environment from major road to a lower speed residential or commercial district. It sends a clear message to motorists that they have reached a specific place and must reduce speeds. Gateways may be a combination of street narrowing, medians, signs, arches over the roadway, roundabouts, or other identifiable feature. Strong visual effects are essential.

**Gateways are used for:**

- Transitioning to a new area, such as a commercial district or neighborhood.
- Creating a unique image for an area.
- Sending a message to motorists that they are traveling from a principal roadway to a commercial or neighborhood district, and that they are expected to slow to an appropriate speed.


A gateway welcomes visitors and creates a sense of place.

## Landscaping

Careful use of landscaping along a street provides separation between motorists and pedestrians, reduces the roadway's effective width, and provides a more pleasant street environment. Landscaping can increase the driver's awareness of the immediate environment. While a row of trees does not actually impede motorists, it does have a psychological effect by making the road appear narrower and inviting the driver to linger. Low-growth shrubs are critical where ability to see cars or pedestrians is important, such as at corners. Trees should be under-trimmed to eight-feet.

Landscaping should also accommodate or improve water runoff. Since more options are available over a larger area, landscaping requires close coordination, consistency and teamwork within a neighborhood. Proposed treatments should also conform to parks and recreation department standards and local government maintenance capabilities.

Trees create comfortable spaces, soften the lighting, cool in the summer, block wind in the winter, and absorb pollutants. Street trees in a downtown area offer an ideal transition between building architecture and the street. When mature, they offer a canopy over the sidewalk. Trees and other landscaping enhancements do require significant consideration due to climate and space.

**Strong landscaping can:**

- Enhance the street environment and improve property values.
- Project an image that the street is part of a place rather than a through route.
- Create energy-saving green environment, cooling and preserving asphalt life, and tempering motorists behavior.
- Increase neighborhood ownership and commitment to place.
- Reduce water runoff.

# Medium Cost

## Curb Extensions

Curb extensions calm traffic and improve pedestrian safety by extending the sidewalk or curb line into the street. Decreasing the street width, they shorten the crossing distance and reduce the time pedestrians are exposed to traffic. Curb extensions can be placed at either a mid-block or intersection location and can tighten overly wide streets. Curb extensions at intersections with traffic signals reduce the amount of time that the light is on red when a pedestrian hits the cross button, providing safety and congestion relief.

It is important that curb extensions are carefully designed. The treatment needs to be effective, but not impede bicyclists and public works maintenance. Curb extensions should drain properly, avoid ice, and not collect road debris buildup. They can improve access for emergency responders and large vehicles to narrow streets that might otherwise be blocked by on-street parking.

**Curb extensions are used for:**

- Encouraging pedestrians to cross at designated locations.
- Increasing visibility for both pedestrians and motorists.
- Reducing the speed of turning vehicles.
- Preventing motorists from parking at corners.
- Providing location for landscaping, benches, and public amenities.

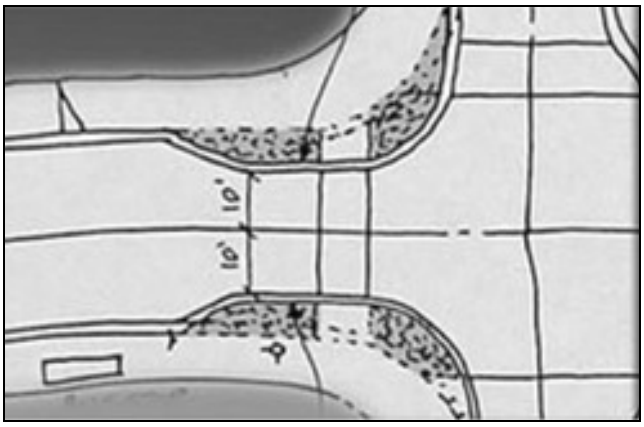


Diagram of well-designed curb extension.

## Partial Street Closure

A partial street closure blocks one direction of motor vehicle traffic into or out of an intersection. It can also block one direction of travel on a two-way street. If one way, then the street should be properly marked with signs such as DO NOT ENTER, NO LEFT TURN, or NO RIGHT TURN. A partial street closure impacts adjacent streets; therefore, it is important to include neighbors in the planning process. It is a restrictive measure and can increase the distance that residents may need to travel.

**Partial street closures are best used for**:

- Preventing turns from an arterial street onto a residential street.
- Reducing the use of the street as a cut-through route.
- Restricting access to a street without creating one-way streets.


## Choker

A choker is an exaggerated curb extension or median that narrows passageways at appropriate points. It does not block one movement (either entering or exiting the intersection), but instead reduces vehicle space, causing motorists to slow down. A choker works best on streets with low volumes. Narrowing the street opening to 14 feet is necessary for speed reduction. If the passage is not restrictive enough, vehicles will continue to speed. To assist emergency responders, chokers should be designed to be low enough for large-vehicles to pass over.

**Chokers are used for:**

- Slowing vehicles at entry-point and mid-point along the street.
- Improving safety for pedestrians and motorists at intersections and increasing visibility
- Enhancing public space.

## Medians

A median may be considered to be a long pedestrian refuge island. Medians provide a refuge for pedestrians, but also can contribute to traffic calming. Adding medians to existing streets may require reducing lane widths, the number of lanes, and/or removing on-street parking. A narrow street contributes to a reduction in vehicle speed. Medians can be designed with turning pockets at intersections or at restricted locations. The separation between opposing directions of traffic and a reduction in points of conflict where turns are allowed increases the safety of all travel modes.

Medians are a simple solution with strong benefits, especially on high-volume, high-speed collectors and arterials. They will often positively affect property values and can double the safety of a roadway. Conversion of a wide street to a narrow one may allow for bike lanes, wider sidewalks, green planter strips and other measures that temper inappropriate driving speed.

**Medians are used for:**

- Managing motor vehicle traffic and providing comfortable left-hand turning pockets with fewer lanes or more narrow lanes.
- Improving access across streets in commercial, park and transit districts or corridors.
- Providing a refuge for pedestrians and bicyclists.
- Providing space for street trees and other landscaping while reducing water run-off.
- Improving access to some properties, especially when used in conjunction with roundabouts or other means to create U-turn opportunities.

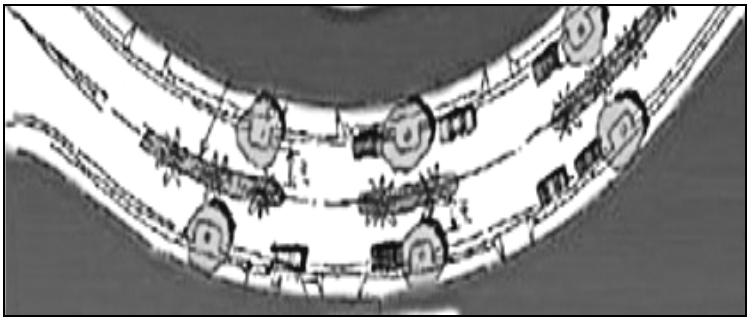


Diagram of broken median with landscaping.

## Planting Strip

Planting strips can be used where the downtown blends into surrounding residential areas or where pedestrian traffic is not as heavy. Planting strips can create a more pleasant environment for pedestrians by separating the sidewalk from the roadway. They also buffer the noise and splash of moving vehicles.

**Planting strips provide:**

- Room for street furniture.
- Place for landscaping and shade trees.
- A better environment for wheel chair users, as sidewalks may be kept at constant grade without dipping at every driveway.
- Better absorption of runoff water, decreasing overall drainage requirements.
- A place to store snow removal in the winter.

## Lighting

Keeping an area illuminated later into the evening can create a more inviting walking environment. This can be accomplished by leaving storefront lights on longer for a soft glow of light. Outdoor lighting brightens up shopping districts and can influence the local tax base by encouraging more shopping and dining activies.

Increased lighting can enhance pedestrian safety in the nighttime. Lamps needs to be low, at a more pedestrian scale. Lighting should be designed to identify an area and preserve the "dark sky" by only directing light downward.

**Benefits of outdoor lighting are:**

- Improve the visibility of pedestrians to motorists.
- Encourage pedestrian activity at night.
- Influence the safety of residents and business owners in the area.
- Enhance the ambiance of a place and affect economic vitality.

Examples of attractive light treatments.

## Sidewalks

Safe and direct sidewalks are necessary for creating a pedestrian-friendly environment. They provide connections to residences, public facilities and commercial services, as well as a place for pedestrians to interact and take part in various community activities. Sidewalks should be wide enough to accommodate movement and amenities such as lighting, landscaping, and street furniture. Suggested sidewalk widths for a downtown area range between 8 and 12 feet, 6 feet of which must be clear from obstructions.

Every block of a main street needs places to sit, such as benches, low walls, or wide steps. Benches should face towards buildings or each other rather than the street to provide a more pleasant view. Buffering the sidewalk with trees separates pedestrians from the adjacent roadway and provides protection from sun and rain. These amenities make the sidewalk area more attractive and provides for a more comfortable pedestrian experience.

Sidewalks and walkways separate pedestrians from the roadway and provide off-street places for children to play. Sidewalks have been associated with a significant reduction in pedestrian-vehicle collisions. Such facilities also improve pedestrian mobility and should be provided for walking from residential areas to other destinations.

**Sidewalks are used for:**

- Creating a pedestrian atmosphere.
- Providing a place for activities, such as outdoor dining.
- Increasing pedestrian safety and comfort.

Residential area.


Downtown commercial district.

# High Cost

## Modified T-Intersection

The treatment is intended to reduce speeds at certain T-intersections (three-leg intersection). The design helps to discourage cut-through traffic in residential areas. It involves a gradual curb extension or bulb at the top of the T so that vehicles are slightly deflected as they pass straight through the intersection. It works best on streets with moderate to low local traffic. The design should slow drivers without causing confusion and is best used for low to moderate traffic volumes.

**Modified T-intersections:**

- Reduces vehicle speeds through intersections on a residential street.
- Narrows the field of vision for motorists
- Simplifies street crossings for pedestrians and bicyclists.

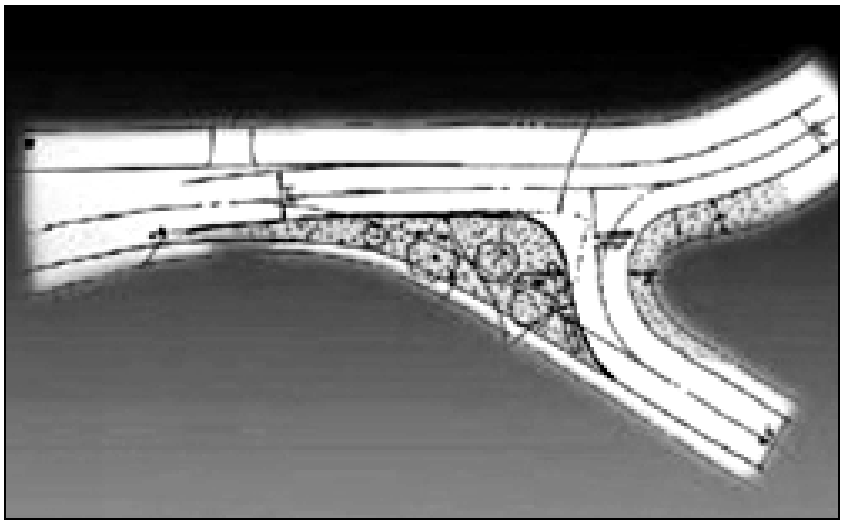


Diagram of change to create a modified-T intersection.

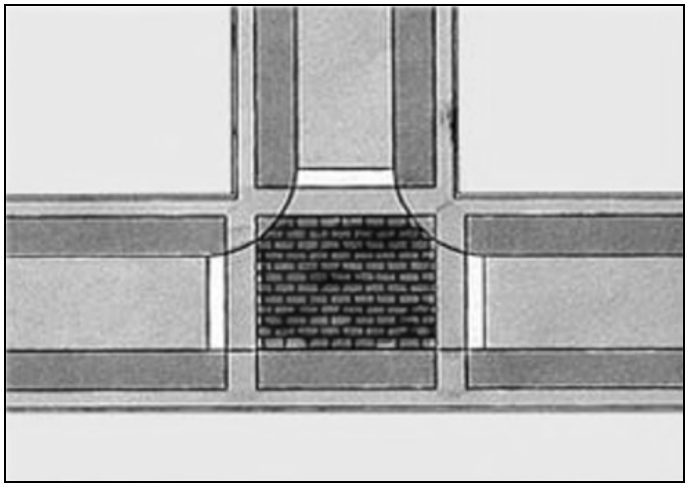
## Raised Intersection

A raised intersection involves ramps on each of the intersection approaches and elevating the entire intersection by approximately 6 inches. The crosswalks on each approach are also elevated as part of this treatment. Bollards are sometime added to reduce the likelihood of drivers cutting through the intersection. The ramps are usually made of concrete, but may be constructed of paving stones, bricks, or other materials.

As with other vertical treatments, a raised intersection is uncomfortable for bus and emergency vehicle passengers. They require a clear sight distance, and cannot be used effectively on steep grades. A raised intersection is a more expensive option.

**Raised intersections**:

- Reduce conflict speeds at a critical location.
- Improve pedestrian and bicycle access and safety at a significant intersection.
- Create a strong corner and place for public amenities.



## Roundabout

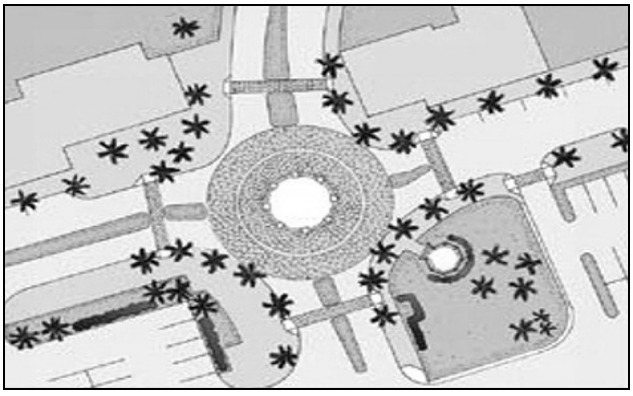
A roundabout is a circular, raised island with deflector/splitter islands that form a hub for the traffic. Roundabouts may be located at the intersection of a collector or arterial street with one or more crossing roadways. Traffic circulates within roundabouts in a counter-clockwise direction and exits the roundabout by turning right onto the desired street. No left-turning movements are needed. Unlike a signalized intersection, drivers yield and select gaps in the traffic to enter the roundabout from each approaching street without having to stop.

Roundabouts are usually similar in cost to install and maintain than traffic signals. They may reduce crashes 50-90% at intersections previously controlled with traffic signals or stop signs. They can also handle 30% more traffic than intersections with signals and, in most cases, eliminate the need to widen the approaches of the intersection to increase capacity.

Roundabouts need to be constructed to accommodate pedestrians and bicyclists with crossing points and medians. Crosswalks should be placed one car behind the yield line so that drivers exiting the roundabout have a full view of pedestrians. One of the major advantages of roundabouts is the reduced need for travel lanes, as traffic flow is more constant.

**Roundabouts are used for:**

- Managing vehicle movements where the existing intersection is unusually large, complex and/or has more than four approach legs.
- Improving an existing signalized or four-leg intersection which is experiencing heavy traffic backup or congestion.
- Increasing the safety of motorists and pedestrians.
- Creating a gateway into a downtown, neighborhood, waterfront or other area.



## Driveway Link

Driveways on private property create a link from home to the street for residents. Driveway links, on the other hand, refer to the use of a winding street pattern that allows for two-way through movements while forcing vehicles to pass one at a time. The serpentine pattern shortens the viewshed and provides an area for trees, shrubs, and other landscaping, which can also create visual obstructions.

Motorists are less likely to speed when they cannot see what is ahead. Driveway links can be an expensive traffic calming strategy and is most cost-effective where a street will soon undergo major reconstruction for utilities or other purposes. It is also a possible consideration for new neighborhood construction.

**The benefits of a driveway link are:**

- Changing the entire look of a street. It sends a message to drivers that the road is not for speeding.
- Slowing traffic on overly long blocks.
- Creating a network of pocket parks that can significantly improve property values in an area.

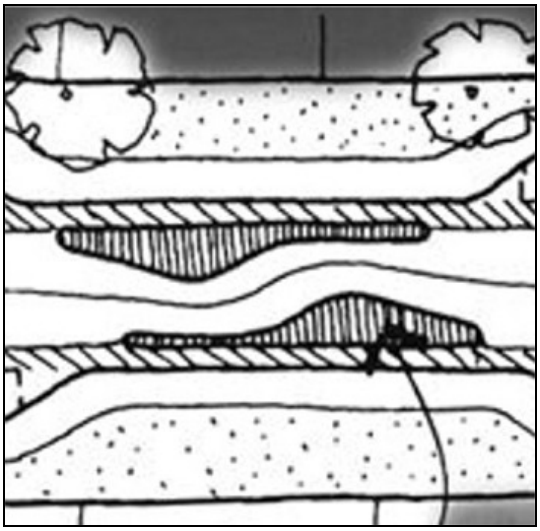


Diagram of driveway link.

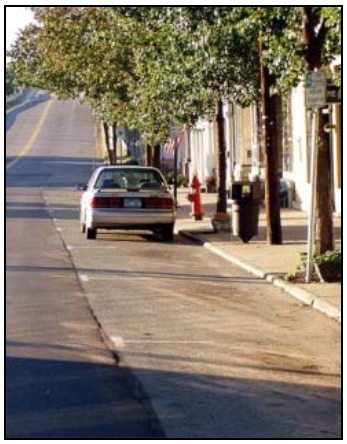
## Parking

On-street parking is normal and necessary on arterial and residential streets. It slows vehicle speed because cars are frequently maneuvering in and out of spaces. Motorists become more aware of their surroundings. On-street parking also buffers the sidewalk from traffic. It increases pedestrian comfort by creating a barrier between the pedestrian and moving vehicles. Parallel parking on one side of the street requires at least 7 feet of the roadway width. A wide outside travel lane is desirable to provide clearance for opening doors and for bicycles. Where right-of-way width permits, a bike lane can be provided between the travel and parking lanes. Angled parking is sometimes used on wide streets to create more parking places and decrease street width. With angled parking, vehicles extend further out into the street, thus reducing the size of the travel lane, which often results in slower speeds through an area. It requires about 19 feet of the roadway width per side.

A community parking lot is another technique to address parking requirements. It should be centrally located within the downtown district and close to shops and businesses. The community parking lot should have a time limit to keep spaces available.

**Parking:**

- Creates a buffer between moving vehicles and pedestrians on the sidewalk.
- Should be well managed to keep spaces open and available.
- Establishes building orientation to the street.
- Influences the economic vitality of the downtown district.

# Future Land Use Decisions

### Land Use Techniques for Expanding the Transportation Network

When existing roadways and sidewalks are no longer adequate to meet a town's transportation needs, or when new development will include new roads and sidewalks, consider the following land use techniques. These techniques provide ways to expand the existing transportation network in consert with existing, or new, development.

- **Develop interconnected streets**: new roads that link to existing streets or roads within a new development and connect to one another increase capacity and help retain the cohesiveness and sense of community so important to small towns.

- **Create focal points:** new roads allow more vehicles to travel on them. In order to encourage travelers to visit and or at least appreciate the town, focal points such as gateway signs or sidewalk cafes are a useful technique. An additional benefit is the natural slowing of vehicles that focal points provide.

- **Build appropriate infrastructure:** appropriate infrastructure need not be just new roads. New roads with sidewalks, new roads with bicycle lanes, new roads with transit stops, and new roads that incorporate one or more of the solutions described in the toolkit, are also appropriate infrastructure. It is easier to include these needs from the beginning than to add on later.

- **Provide for alternative transportation facilities.** As suggested above, appropriate infrastructure can include sidewalks, bicycle lanes, and transit stops. All of these provide for alternative transportation – walking, bicycling, and riding the bus.

- **Include relegated parking:** relegated parking means including parking behind, rather than just in the front, of the building. For commercial buildings, relegated parking allows the storefront to have greater visibility and a more immediate

connection to the street. For example, in a shopping center, having only a few of the required parking spaces in the front makes the store more visible and identifiable. In the residential setting of many older neighborhoods, alleys allow for parking in the back thereby supporting a streetscape that is not compromised by driveways and garages that front right on the road. In newer, strip shopping development, these connections can be made between parking lots of existing shopping centers.

## Land Use Techniques for New Physical Growth

- **Define hard edges:** defining hard edges means making a clear delineation of the boundaries between new development and open or protected space. Hard edges allow the bulk of transportation resources to be in the area of new development and reduce the need for more and more roads as is so often the case with suburban sprawl.

- **Grow in designated areas**: this is a corollary to defining hard edges. The designated growth area is clearly defined.

- **Preserve rural areas**: by growing only in designated areas, and growing in a compact fashion, more land is preserved. This protected land opens up opportunities for parks, natural areas with trails, and habitat for plants and animals.

- **Require site planning that respects the terrain and the environment:** placing buildings into the existing terrain instead of leveling the land and building ensures a better, more natural fit. It looks more appropriate in rural areas and also has environmental benefits – runoff is reduced and less disruption occurs during construction. A site plan that includes or incorporates some green space (such as a community park) also improves drainage.

- **Make open space accessible and useful**: by defining hard edges, open space is preserved. Open space should be adjacent to developed areas so a hike in the woods is possible. To enhance the experience, trails or parks may be incorporated into open space.

## Land Use Techniques for New Residential Development

- **Use enhanced suburban designs**: enhanced suburban designs diverge from the traditional subdivision, which typically does not include sidewalks or trails, and has numerous cul-de-sacs. Enhanced suburban design includes sidewalks or trails, and interconnected streets as part of the development.

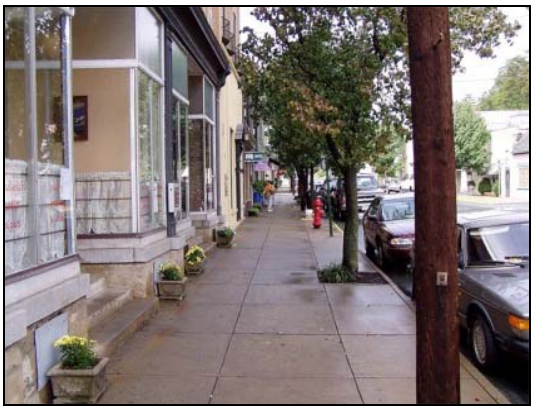
- **Create neighborhood centers:** for exclusively residential development, a neighborhood center could be a small park or even a roundabout that defines the heart of the community. Parks encourage a sense of community and offer recreation for both children and adults.

- **Provide neighborhood friendly streets and trails**: examples of neighborhood friendly streets are those with sidewalks, trees and a grassy area between the street and the sidewalk, and narrow streets that slow traffic and improve safety. Trails to parks and open space promote their use.

- **Ensure housing affordability**: a mixture of housing types promotes affordable housing. Incentives for including affordable housing into a residential development, such as a density bonus, should be written into residential development standards. A joint public-private partnership with a local non-profit housing development corporation is another technique for ensuring affordability.

## Land Use Techniques for Downtown Development

- **Encourage mixed uses:** downtown need not be entirely commercial. Residential units, such as apartments above stores, fit into a classic small town city center configuration and should be encouraged. A mix of commercial types encourages a vibrant and diverse downtown. A mix of public and private uses also supports a vibrant downtown. Pocket parks, museums, municipal buildings, schools, even recycling centers, are examples of appropriate public uses.



- **Encourage pedestrian orientation:** pedestrian-friendly downtowns make them a more desirable destination for visitors and encourage residents to walk and take advantage of the resources and amenities available downtown.

- **Construct buildings and spaces at human scale:** most small town business districts have a certain intimacy not typically found in urban areas. The intimacy is enhanced with buildings not higher than two or three stories, storefronts close to the sidewalks, and pocket parks instead of large expanses of open space. Even a central parking area should not be so large as to overwhelm the downtown.

# Implementation

## Identifying Appropriate Projects

In order to be truly successful, projects must be affordable and realistic, and their design should reflect, and fit into, the history and character of the town. The Toolbox: Designs for Workable Solutions chapter groups the design solutions by cost: low, medium, or high. Once a problem has been identified, assess the range of possible solutions based on their affordability and ability to be accomplished. In the design phase, be sure the designers prepare plans that are compatible with the town's history and architectural character. This ensures the completed project complements the town character and does not look like an "add-on".

Most towns can identify more problems than there are funds to achieve. Clearly the town must set priorities for implementation and identify, and periodically re-examine, a phased approach to implementation. Once high priority projects have been identified, specific planning and design documents and construction plans must be completed. For large scale projects, environmental review and right-of-way acquisition may be necessary.

## Funding

Funds for identified projects range from those available at the local level to resources available at the state and federal level. Funds may include private-sector funding as well. Often projects are funded from more than one source and if the town is able to contribute local financing for even a small part of the project, it is looked upon favorably by other contributors.

- **Local Funding**: incorporated towns may levy a town tax on property in addition to that levied by the host county. For most towns it is a limited resource, but if there is broad public support for a project, allocation of these funds to a project may be realistic. A local sales tax and/or food and beverage tax could be considered since the local businesses benefit directly or indirectly from any improvements. For unincorporated towns, partnering with the host county to do a joint project may be pursued, especially if the project benefits both town and county residents and businesses.

- **State Funding**: to a large degree, transportation funds available through the state are a mix of state and federal funds. These are allocated by the state into funding for interstate, primary, secondary roads, rail and public transit, and for other transportation needs such as pedestrian sidewalks and trails, facilities for cyclists, and aesthetic enhancements. In Virginia, secondary road funds are allocated to each county and the county has discretion to use the available funds on the secondary system in a number of different ways. For non-traditional transportation projects, funds are often available through a competitive application process.

- **Federal Funding**: The Transportation Equity Act for the 21st Century (TEA-21) authorizes highway, highway safety, transit and other surface transportation programs. It is through TEA-21 that states receive surface transportation funds, including funds for many of the solutions identified in this manual. In addition, specific transportation planning grants are available through the Department of Transportation on a competitive basis.

- **Private Funding**: Most private foundations tax exempt non-profit foundations (a 501(c)(3) corporation as defined by the Internal Revenue Service). A downtown foundation, developed in part to receive private sector funding, is a useful option, particularly one that acts in partnership with the town or county government. In addition, private project development can be coordinated to build segments of sidewalks, trails, parks, and landscaping once a community plan is in place.

## Construction Phasing

Once a project has been identified and funding secured, an organized designed construction process will help ensure a successful project. The needs of community members and businesses must be identified and factored into the construction phasing in order to minimize the disruption caused by construction. Local residents, business owners, elected officials, town staff, and the resident transportation engineer should participate in the following:

- Presentations to residents and business owners on the scope of the project, the timing of construction, and potential disruptions.
- Meetings with residents and downtown business owners to discuss pedestrian access needs, and vehicle access during construction.
- Development of an access management plan to ensure that main routes and the routes used to reach businesses and homes are open during construction, or that alternate routes are identified. (An access management plan describes how roads can efficiently carry traffic and do so safely.)
- Development of a parking plan to identify shared parking lots or on-street parking that will be available during construction.
- Installation of signs to point visitors to the available parking.
- Development of a marketing plan that showcases the downtown improvements so that visitors to the town and patrons of the town's businesses are informed and are interested in the project.

## Resources for Virginia's Towns

The Virginia Department of Transportation (VDOT) supports improvements that increase safety and reduce vehicle to vehicle and vehicle to pedestrian conflicts. Most of the solutions described in this Manual are consistent with VDOT's objectives. Coordination of traffic analyses, geometric design plans, access points and easement agreements with VDOT is essential for a successful project.

VDOT will accept new roadways that conform to the Subdivision Street Standards into the state system and assume the maintenance. After the locality has accepted the new streets, the governing body may ask VDOT to assume the responsibility to operate and maintain the new streets.

**The VDOT Transportation Enhancement Program** fosters more choices for travel by providing funding for sidewalks, bike lanes, and the conversion of abandoned railroad corridors into trails. Communities may also use the program to revitalize local and regional economies by restoring eligible historic buildings, renovating streetscapes, or providing transportation museums and visitor centers. Many communities also use the program to acquire, restore and preserve scenic or historic sites. Eligible projects include:

- Pedestrian and Bicycle Facilities
- Pedestrian and Bicycle Safety and Educational Activities
- Acquisition of Scenic or Historic Easements and Sites
- Scenic or Historic Highway Programs including Tourist and Welcome Centers
- Landscaping and Scenic Beautification
- Historic Preservation
- Rehabilitation and Operation of Historic Transportation Buildings, Structures, or Facilities
- Preservation of Abandoned Railway Corridors
- Control and Removal of Outdoor Advertising
- Archaeological Planning and Research
- Mitigation of Highway Runoff and Provision of Wildlife Under/Over-crossings
- Establishment of Transportation Museums

VDOT also has a State Bicycle and Pedestrian Coordinator whose responsibilities include providing training and education on bicycle and pedestrian planning and design issues and will assist towns in developing and better understanding bicycle and pedestrian facilities.

VDOT's traffic calming program is designed for existing residential streets experiencing speeding traffic. Many of the solutions proposed in this manual fit with this program. VDOT has estimated costs for some of these solutions:

- Speed hump - $2,000 - $3,000
- Choker - $7,000 -$10,000
- Traffic circle - $3,500 - $15,000
- Raised crosswalk - $2,500 - $8,000
- Raised median island - $5,000 - $15,000
- Crosswalk refuge - $5,000 - $15,000
- Chicane - $5,000 - $15,000 per set

# APPENDIX A:
# NEIGHBORHOOD AUDIT FORM

Name of Observer_____

Neighborhood_____

Date/Time of Audit_____

Where do you live?_____

Age: 1-10 11-15 16-20 21-40 41-65 65+

Are you a: Pedestrain Bicyclist Motorist Resident Business Owner/Employee

## For the list below, circle the number that best describes the conditions in your neighborhood:

| | **Not a Problem>>>Serious Problem** | | | | |
|---|---|---|---|---|---|
| Motorist courtesy toward pedestrians | 1 | 2 | 3 | 4 | 5 |
| Traffic safety for children and elderly | 1 | 2 | 3 | 4 | 5 |
| Number of cars | 1 | 2 | 3 | 4 | 5 |
| Speeding | 1 | 2 | 3 | 4 | 5 |
| Motorists obey stop signs | 1 | 2 | 3 | 4 | 5 |
| On-street parking available | 1 | 2 | 3 | 4 | 5 |
| Pedestrians can cross streets easily | 1 | 2 | 3 | 4 | 5 |
| Traffic noise | 1 | 2 | 3 | 4 | 5 |
| Visibility of pedestrians | 1 | 2 | 3 | 4 | 5 |
| Quality of pedestrian experience | 1 | 2 | 3 | 4 | 5 |
| Other:_____ | 1 | 2 | 3 | 4 | 5 |
| Other:_____ | 1 | 2 | 3 | 4 | 5 |

Please use the space here or on a separate sheet to describe specific problems in your neighborhood and the locations where they occur:

# APPENDIX B:
# STREET INVENTORY FORM

Name of Observer_____

Neighborhood_____

Date/Time of Audit_____

Street/Cross Street_____

**Please circle or write your responses:**

Roadway Type Commercial Residential

Number of Lanes One Two Three Four Five

Block Length (feet) 200-300 301-400 401-500 501-800 Over 800

On-Street Parking None Light Moderate Heavy Saturated

Walkway/Sidewalk None One Side Both Intermittent

Walkway Width (feet): _____ ____ _____

Type of Walkway Grass Asphalt Concrete

Traffic Volume (vehicles/hour): _____ _____ _____

Average Speed (miles/hour): 15-20 20-25 25-30 30-35 35-40 40-45 45-50 50+

**If possible, please draw the street section below. Indicate dimensions in feet for each element you draw (sidewalk, bike lane, roadway):**